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EXAMINER
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SHINGLES, KRISTIE D

ART UNIT	PAPER NUMBER
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2141

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

09/872,920

**Applicant(s)**

CHANDRA ET AL.

**Examiner**

Kristie D. Shingles

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

*No claims have been amended or canceled.  
Claims 1 - 43 are pending.*

### *Response to Arguments*

I. Applicant's arguments filed 1/12/2007 have been fully considered but they are not persuasive.

A. Regarding Claims 1 and 28: Applicant argues that the cited prior art of record, *Fuchs* (US 5,440,726), fails to teach the claimed limitations of “clearing the first set of data by the second network process if a time period expires and synchronizing by the second network process, the first set of data with a second set of data if the time period does not expire, the second set of data received from the first network process after the first network process restarts”.

Examiner respectfully disagrees. *Fuchs* teaches that the error detection monitor of the watchdog determines that a process is hung or has crashed if the watchdog fails to receive a heartbeat signal from the process before a specified time interval (*col.7 lines 40-60, col.11 lines 44-53, col.14 lines 38-47*). Thus upon detecting a faulted process, the watchdog will initiate a rollback procedure which will rollback the process to its latest checkpoint state—this rollback procedure will unsend and unreceive messages which occurred after the latest checkpoint, thereby discarding all messages after the latest checkpoint (*col.9 lines 11-36, col.10 lines 31-40, col.11 lines 13-18*). Furthermore, whenever a checkpoint is initiated and successfully executed by one process, a broadcast is made notifying other process in order to maintain synchronization of each process's most up-to-date checkpoint status (*col.8 lines 39-57*). It is therefore evident that *Fuchs* teaches the use of “time-out mechanisms” as well as synchronization in implementing

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a data recovery system that utilizes checkpointing, rollback, message replaying and message reordering. Applicant's arguments are therefore unpersuasive and the rejection under the cited prior art is maintained.

- B. Regarding Claims 16, 20 and 24:** Applicant argues that *Fuchs* (US 5,440,726), fails to teach the claimed limitations of "the first network process to generate a first set of data before restarting and a second set of data after restarting, the second network process to synchronize for itself the first and second set of data upon determining a time period has not expired, the time period beginning when the first network process dies".

Examiner respectfully disagrees. *Fuchs* teaches that the error detection monitor of the watchdog determines that a process is hung or has crashed if the watchdog fails to receive a heartbeat signal from the process before a specified time interval (*col.7 lines 40-60, col.11 lines 44-53, col.14 lines 38-47*). Thus after the first set of checkpoint data is generated before initiating a restart, the messages sent after the restart are synchronized by replaying the messages from the message log in order to reconstruct the process (*col.7 lines 14-22*). Applicant's arguments are therefore unpersuasive and the rejection under the cited prior art is maintained.

- C. Regarding Claims 7 and 34:** Applicant argues that *Engel et al* (US 6,681,389) in view of *Damani et al* (US 5,938,775) fail to teach the claimed limitations of "if a first set of data is generated by the first network process before a time period expires, then synchronizing by the second network process the first set of data with a second set of data, the second set of data having been generated by the first network process before the death of the first network process".

Examiner respectfully disagrees. *Damani et al* teach rollback-synchronization among the processes wherein the inter-process communication (orphaned) data if the time period expires (*col.3 lines 32-40, col.6 lines 44-59, col.7 lines 9-34, col.9 lines 11-13, col.9 line 54-col.10 line 14*). That is, the data generated after the time before the death of the first process is

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synchronized with the data generated from or before the latest checkpoint and a roll-back is performed for the failed restarted process (*Abstract, Figure 5R, col.8 lines 20-65*). *Engel et al* further teach having a designated time period, wherein if data is generated before that time period expires automatically rolling back the updated data when the updated data was generated before the process died (*col.12 lines 19-29*). Applicant's arguments are therefore unpersuasive and the rejection under the cited prior art is maintained.

- D.** Regarding Claim 12: Applicant argues that *Kidder et al* (US 6,694,450) in view of *Damani et al* (US 5,938,775) fail to teach the claimed limitations of "second network process to synchronize for itself the first set of data with a second set of data generated by the first network process before restarting upon determining a time period has not expired, the time period beginning when the first network process dies".

Examiner respectfully disagrees. As stated above, in response to argument C, *Damani et al* teach rollback-synchronization among the processes wherein the inter-process communication (orphaned) data if the time period expires (*col.3 lines 32-40, col.6 lines 44-59, col.7 lines 9-34, col.9 lines 11-13, col.9 line 54-col.10 line 14*). Yet *Kidder et al* further teach that "if a primary instantiation fails, it can be restarted, retrieve its last known dynamic state from the backup instantiation and then initiate an audit procedure to resynchronize with the other processes" (*col.3 lines 42-52, col.3 line 63-col.4 line 6, col.40 lines 6-18, col.42 line 43-col.43 line 12, col.46 lines 35-62*). Thus it can be seen that the primary process is able to synchronize itself with the backup process within a defined synchronization time before a service disruption is detected. Applicant's arguments are therefore unpersuasive and the rejection under the cited prior art is maintained.

**CLAIM REJECTIONS - 35 USC § 102**

**II.** The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**III.** Claims 1, 2, 4-6, 16-29, 31-33 and 39-43 are rejected under 35 U.S.C. 102(b) as being anticipated by *Fuchs et al* (USPN 5,440,726).

a. **Regarding claims 1 and 28,** *Fuchs et al* teach a computer implemented method and machine-readable medium comprising:

- receiving by a second network process a first set of data from a first network process (*col. 7 lines 20-50*);
- determining death of the first network process (*col. 7 lines 56-60*);
- clearing the first set of data by the second network process if a time period expires (*col. 8 lines 29-57, col. 24 lines 33-43, col. 27 lines 65-68*); and
- synchronizing by the second network process, the first set of data with a second set of data if the time period does not expire, the second set of data received from the first network process after the first network process restarts (*col. 10 line 14-col. 11 line 18, col. 25 lines 35-65*).

b. **Regarding claim 16,** *Fuchs et al* teach a network element comprising:

- a first processor to execute a first and second network process, the first network process to generate a first set of data before restarting and a second set of data after restarting, the second network process to synchronize for itself the first and second set of data (*col. 10 lines 15-20*);
- the second network process to synchronize the first set of data with a second set of data generated by the first network process before restarting upon determining a time period has not expired, the time period beginning when the first network process dies (*col. 11 lines 22-66, col. 13 line 38-col. 14 line 47*); and

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- a second processor coupled to the first processor, the second processor to process a set of traffic using the first set of data before the first network process restarts and a third set of data after the first network process restarts (*col.10 line 14-col.11 line 18*).

c. **Claims 20 and 24** contain limitations that are substantially similar to claim 16 and are therefore rejected under the same basis.

d. **Claims 39 and 43** contain limitations that are substantially similar to claims 1 and 16 and are therefore rejected under the same basis.

c. **Regarding claims 2, 27 and 29**, *Fuchs et al* teach the computer-implemented method of claim 1, further comprising indicating the first set of data as stale when the network process is determined to be dead (*col.9 line 11-col.11 line 18*).

d. **Regarding claims 4 and 31**, *Fuchs et al* teach the computer implemented method of claim 1, wherein the first set of data and the second set of data are synchronized after a done signal is received (*col.10 line 14-col.11 line 18, col.25 lines 35-65*).

e. **Regarding claims 5 and 32**, *Fuchs et al* teach the computer implemented method of claim 1, further comprising restoring a set of configurations to the network process after the first network process restarts (*Abstract, col.9 line 11-col.12 line 18*).

f. **Regarding claims 6 and 33**, *Fuchs et al* teach the computer-implemented method of claim 1, wherein further comprising clearing the second set of data if the time period expires and a done signal is not received (*col.8 lines 29-57, col.24 lines 33-43, col.27 lines 65-68*).

g. **Regarding claim 17**, *Fuchs et al* teach the network element of claim 16, wherein the first processor comprises a memory to store the first, second and third set of data (*col.13 lines 53-58, col.14 lines 48-53*).

h. **Regarding claim 18**, *Fuchs et al* teach the network element of claim 16, further comprising the first processor to allocate a first memory to the first network process and a second memory to the second network process (*col.13 lines 53-58, col.14 lines 48-53*).

i. **Regarding claim 19**, *Fuchs et al* teach the network element of claim 16, further comprising the first processor to allocate a first memory to the first network process, a second memory to the second network process, and a third memory to store the first set of data, the second set of data, and the third set of data (*col.13 lines 53-58, col.14 lines 48-53*).

j. **Regarding claim 21**, *Fuchs et al* teach the network element of claim 20, the element wherein the first memory, the second memory and the third memory are main memory (*col.13 lines 53-58, col.14 lines 48-53*).

k. **Regarding claim 22**, *Fuchs et al* teach the network element of claim 20, wherein the first memory, the second memory, and the third memory are mass storage (*col.13 lines 53-58, col.14 lines 48-53*).

l. **Regarding claim 23**, *Fuchs et al* teach the network element of claim 20, wherein the first memory, the second memory, and the third memory are a set of regions of a memory (*col.13 lines 53-58, col.14 lines 48-53*).

m. **Regarding claim 25**, *Fuchs et al* teach the network element of claim 24, wherein the second network element comprises: a first memory to store the first set of data and the synchronized set of data; and a second memory to store the second set of data (*col.13 lines 53-58, col.14 lines 48-53*).



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n. **Regarding claims 26 and 42**, *Fuchs et al* teach the system of claims 24 and 39 further comprising the second network element to clear the first and second set of data if a time period expires (*col.8 lines 29-57, col.24 lines 33-43, col.27 lines 65-68, col.28 lines 34-44*).

o. **Regarding claim 40**, *Fuchs et al* teach the method of claim 39, wherein the timer is initialized upon receipt of the death notification (*col.11 lines 47-53*).

p. **Regarding claim 41**, *Fuchs et al* teach the method of claim 40, wherein the death notification is based on an absence of a heartbeat from the second network process (*col.11 lines 44-66*).

#### ***CLAIM REJECTIONS - 35 USC § 103***

IV. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

V. **Claims 3, 7-11, 30 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Engel et al* (USPN 6,681,389) in view of *Damani et al* (USPN 5,938,775).**

q. **Regarding claims 7 and 34**, *Engel et al* teach a computer implemented method, network element and machine-readable medium comprising:

- detecting death of a first network process (*col.2 lines 10-12*);
- restarting the first network process (*col.5 lines 36-39, col.6 lines 4-21, col.9 line 62-col.10 line 3*); and
- restoring a set of configurations to the first network process (*col.2 lines 12-17, col.6 lines 13-16*).

*Engel et al* fail teach to explicitly teach if a first set of data is generated by the first network process before a time period expires, then synchronizing by the second network process the first set of data with a second set of data, the second set of data having been generated by the first network process before the death of the first network process and if the time period expires, then clearing the second set of data by the second network process. However, *Damani et al* teach rollback-synchronization among the processes wherein the inter-process communication (orphaned) data if the time period expires (*col.3 lines 32-40, col.6 lines 44-59, col.7 lines 9-34, col.9 lines 11-13, col.9 line 54-col.10 line 14*).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the restart and rollback system of *Engel et al* with *Damani et al*'s fault tolerant IPC message passing system wherein then the second set of data is cleared if the time period expires, because this data is invalid and this prevents the system from processing invalid data because which may corrupt the system and compromise the integrity of the processes.

r. **Regarding claims 9 and 36**, *Engel et al* with *Damani et al* teach the computer implemented method of claims 7 and 34, *Damani et al* further teach the method further comprising wherein expiration of the time period is determined with a timer maintained after the network process is determined to be dead (*col.2 lines 35-54*).

s. **Claims 3 and 30** are substantially similar to claims 9 and 36 and are therefore rejected under the same basis.

t. **Regarding claims 11 and 38**, *Engel et al* with *Damani et al* teach the computer implemented method of claims 7 and 34, *Damani et al* further teach the method wherein further

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comprising clearing the second set of data if the time period expires and a done signal is not received (*col.3 lines 33-40*).

u. **Regarding claims 8 and 35**, *Engel et al* with *Damani et al* teach the computer implemented method of claims 7 and 34, *Damani et al* further teach the method teaches indicating the second set of data as stale when the network process is detected as dead (*col.3 lines 33-40*).

v. **Regarding claims 10 and 37**, *Engel et al* with *Damani et al* teach the computer implemented method of claims 7 and 34, *Damani et al* further teach the method wherein the first set of data and the second set of data are synchronized after a done signal is received (*col.6 lines 1-23 and 44-66, col.7 lines 11-34*).

**VI. Claims 12 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Damani et al* (USPN 5,938,775) in view of *Kidder et al* (USPN 6,694,450).**

w. **Regarding claim 12**, *Kidder et al* teach a network element comprising:

- a cross connect control module to host a first and second network process, the first network process to generate a first set of data after restarting and the second network process to synchronize for itself the first set of data with a second set of data generated by the first network process before restarting (*col.3 lines 42-52, col.3 line 63-col.4 line 6, col.42, line 66-col.43 line 12*); and
- a traffic card coupled to the cross connect module, the traffic card to process a set of traffic with the synchronized first and second set of data (*col.3 lines 42-52, col.3 line 63-col.4 line 6, col.42, line 66-col.43 line 12*).

*Kidder et al* fail to explicitly teach the second network process to synchronize the first set of data with a second set of data generated by the first network process before restarting upon determining a time period has not expired, the time period beginning when the first network process dies. However, *Damani et al* teach rollback-synchronization among the

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processes wherein the inter-process communication (orphaned) data if the time period expires (*col.3 lines 32-40, col.6 lines 44-59, col.7 lines 9-34, col.9 lines 11-13, col.9 line 54-col.10 line 14*). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the restart and rollback system of *Kidder et al* with *Damani et al*'s fault tolerant IPC message passing system wherein then the second set of data is cleared if the time period expires, because this data is invalid and this prevents the system from processing invalid data because which may corrupt the system and compromise the integrity of the processes.

x. **Regarding claim 13, *Kidder et al* with *Damani et al* teach the network element of claim 12, *Kidder et al* further teach the element wherein the cross connect module comprises a first and second memory to host the first and second network process (*col.3 lines 42-52, col.3 line 63-col.4 line 6*).**

y. **Regarding claim 14, *Kidder et al* with *Damani et al* teach the network element of claim 12, *Kidder et al* further teach the element wherein the traffic card comprises a set of processors to process the first and second set of data (*col.3 lines 42-52, col.3 line 63-col.4 line 6*).**

z. **Regarding claim 15, *Kidder et al* with *Damani et al* teach the network element of claim 12, *Kidder et al* further teach the element wherein the cross connect module comprises: a first memory to host the first network process; a second memory coupled to the first memory, the second memory to host the second network process; and a third memory coupled to the first and second memory, the third memory to store the first set of data, second set of data, and the**

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synchronized set of data (*col.3 lines 42-52, col.3 line 63-col.4 line 6, col.42 line 66-col.43 line 12*).

***Conclusion***

**VII.** The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Shirakihara et al (5,923,832), McAllister et al (6,876,625), Brittain' et al (6,684,396), Kanulainen (5,838,659), Zhou et al (6,178,522), Huang (5,748,882), Chung et al (6,044,475), Meth et al (6,401,216), Bartfai et al (6,012,150).

**VIII. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**IX.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie D. Shingles whose telephone number is 571-272-3888. The examiner can normally be reached on Monday 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Kristie Shingles*  
*Examiner*  
*Art Unit 2141*

*kds*

  
RUPAL DHARIA  
SUPERVISORY PATENT EXAMINER